

# MD RASEL KHAN

Senior Full-Stack Software Engineer

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## PROFESSIONAL SUMMARY

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- **Senior Full-Stack Engineer** with 7+ years building production systems and AI-powered platforms for clients across the USA, Finland, and Japan, leading cross-functional teams of up to 12 engineers.
- Expert in **TypeScript, NestJS, Node.js, React.js, Next.js, and Python (FastAPI)** with deep experience designing event-driven microservices, RESTful APIs, and high-volume PostgreSQL schemas.
- Architected **Generative AI and RAG pipelines** using PostgreSQL (pgvector), Milvus, Azure OpenAI, PydanticAI, and CrewAI for enterprise audit automation in regulated industries.
- Hands-on technical lead who **mentors engineers, sets engineering standards, drives CI/CD adoption**, and delivers end-to-end on AWS and Azure.

## TECHNICAL SKILLS

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**Languages:** TypeScript, JavaScript (ES6+), Python, SQL, PHP

**Frontend:** React.js, Next.js (App Router & Pages Router, ISR), Svelte 5/SvelteKit, Vue.js, Angular, Redux, Zustand, React Query, Tailwind CSS, Material UI

**Backend & APIs:** NestJS, Node.js (Express, Fastify, TSOA), Python (FastAPI, Flask, SQLAlchemy, SQLModel, Alembic), REST, GraphQL, OAuth 2.0, Swagger, Microservices, Event-driven Architecture, Serverless Framework, Shopify App Development

**Databases & ORMs:** PostgreSQL, MySQL, MongoDB, Redis, DynamoDB, pgvector, Milvus, Algolia; TypeORM, Prisma, Sequelize, Mongoose; schema design, query optimization, JSONB, full-text search

**Cloud & DevOps:** AWS (Lambda, SQS, S3, Glue, Athena, DynamoDB, QuickSight, EC2, Cognito, CloudFront), Azure (APIM, Container Apps, Key Vault, Functions), Docker, Terraform, GitHub Actions, Bitbucket Pipelines

**AI / GenAI:** RAG pipelines, PydanticAI, CrewAI, Azure OpenAI, vector databases, embedding strategies, agentic workflows

**System Design:** Microservice decomposition, event-driven pipelines, API gateway patterns, caching strategies, rate limiting, multi-tenant data modeling

**Practices:** Clean Architecture, SOLID, TDD, Agile/Scrum, code reviews, performance optimization, mentoring

## PROFESSIONAL EXPERIENCE

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**Senior Software Engineer** | *Astha IT*

**Dec 2021 - Present**

*Dhaka, Bangladesh*

### **AI-Driven Audit Automation Platform — USA Client (Augmented Team)**

- Architected and shipped a **RAG-powered audit automation platform** that ingests and analyzes large financial documents, significantly reducing manual review time for enterprise accounting workflows.
- Engineered RESTful APIs and microservices in **Node.js / Python (FastAPI, SQLAlchemy)** for document ingestion, audit report generation, and structured analysis of balance sheets, income statements, and cash flow data.
- Designed RAG pipelines on **PostgreSQL (pgvector) and Milvus** integrated with Azure OpenAI, enabling semantic search over chunked financial documents for context-aware audit insights.
- Built an **Azure API Management gateway** with wildcard pass-through routing, outbound response scrubbing policies, and Key Vault-managed token rotation via Container Apps Jobs (Playwright-based) — eliminating manual token refreshes.
- Developed **PydanticAI agents and CrewAI workflows** for structured AI tasks including footnote extraction and financial-statement cross-referencing, improving extraction accuracy and reducing hallucinations.
- Hardened the platform with secure-coding practices and full CI/CD on Azure to meet regulatory expectations for sensitive enterprise data.

### **Multi-Vendor Event Management Platform — USA Client (Augmented Team)**

- Owned end-to-end architecture (**SvelteKit + Supabase + Stripe + Vercel**) for a multi-vendor event platform handling ticketing, vendor onboarding, waitlists, and interactive seat selection.
- Modeled **multi-tenant PostgreSQL schemas** for vendor profiles, seat inventory with reservation locking, and transactional payment flows — preventing double-booking under concurrent load.
- Integrated **Stripe Connect (destination-charge model)** with platform fee calculations, vendor payouts, and webhook-driven payment state machines.
- Built a **PostgreSQL-native OTP security layer** using pgcrypto on Supabase — eliminating Redis as a dependency and reducing infrastructure cost.
- Delivered serverless email notifications via **Supabase Edge Functions + Resend** for transactional and marketing communications.

### **Online Shopping Assistant — Finland Client (Augmented Team, 2.5+ years)**

- Built a personalized **recommendation and analytics engine** in React.js + TypeScript, driving measurable uplift in upsell, cross-sell, and daily-deal conversions for merchant clients.
- Developed scalable backend APIs with **NestJS, Serverless Framework, AWS SQS, and DynamoDB** handling high-volume product and event records.
- Designed **event-driven data pipelines** using AWS Lambda, S3, Glue, and Athena for real-time analytics and historical archival.
- Built **BI dashboards on AWS QuickSight** surfacing merchant performance, conversion funnels, and revenue trends from the Athena data layer.
- Rebuilt the merchant-facing dashboard in **Next.js (App Router)** — significantly reducing load times and improving long-term maintainability.
- Mentored junior engineers and led structured **CodeCamp training** programs for fresh graduates joining the team.

### **Full-Stack Engineer | Silicon Orchard Limited**

**Oct 2019 – Nov 2021**

*Dhaka, Bangladesh*

- Engineered scalable RESTful APIs and microservices in **Node.js (NestJS, Express) with MySQL**, with async messaging via RabbitMQ for decoupled, resilient services.
- Re-architected a monolithic application into a **microservices system** following modular patterns; integrated cryptocurrency (Bitcoin, Ethereum) payments for client projects.
- Implemented **pub/sub caching with Redis** and real-time features (WebSocket, Socket.io) including live chat and FCM-based push notifications.
- Built React frontends for an **auction management system** and a Japan-based power grid supplier operations platform.
- Established logging, monitoring, and alerting to proactively detect and resolve production issues.

### **Software Engineer | SCT Bangla Limited**

**Jan 2019 – Sep 2019**

*Dhaka, Bangladesh*

- Built backend modules in **Node.js, PHP, and MySQL** for production planning, task management, and operational workflows for a manufacturing client.
- Developed real-time dashboards and monitoring tools using WebSockets, Kendo UI, and jQuery for live operational visibility; created BIRT reports for quality control, maintenance, and incident tracking.

### **Web Developer | Euro Bangla IT**

**Feb 2018 – Dec 2018**

*Dhaka, Bangladesh*

- Delivered **Laravel + MySQL** solutions for the Annual Development Programme (ADP) under Bangladesh's a2i digital initiative — implementing budgeting workflows and government reporting features.

## **EDUCATION**

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### **B.Sc. in Computer Science & Engineering**

**2013 – 2017**

*Daffodil International University, Dhaka, Bangladesh*